

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
16 June 2005 (16.06.2005)

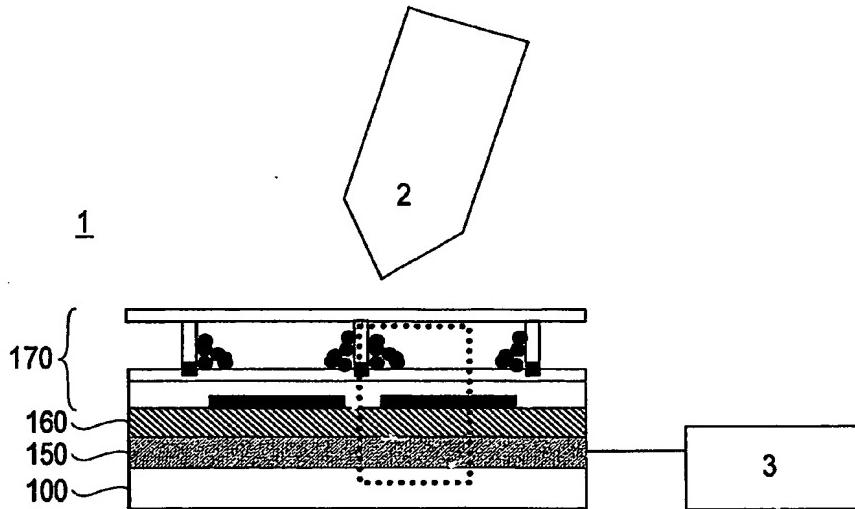
PCT

(10) International Publication Number  
**WO 2005/055030 A3**

- (51) International Patent Classification<sup>7</sup>: G06F 3/033,  
G09F 9/37
- (21) International Application Number:  
PCT/JP2004/018685
- (22) International Filing Date: 8 December 2004 (08.12.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
2003-409150 8 December 2003 (08.12.2003) JP  
2003-428471 24 December 2003 (24.12.2003) JP
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- (81) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,

[Continued on next page]

(54) Title: DISPLAY APPARATUS



WO 2005/055030 A3

(57) Abstract: A display apparatus includes a substrate having a metal layer, a plurality of scanning signal lines and a plurality of data signal lines which intersect with each other and are disposed on the substrate, a display device which has a display element located at an intersecting position of the scanning and data signal lines and is driven by a voltage signal supplied to the scanning and data signal lines, a plurality of coils disposed in parallel with each other on the substrate, and a circuit for detecting currents passing through the plurality of coils by the action of electromagnetic induction of an electromagnetic wave locally generated at a surface of the display device to determine a generation position of the electromagnetic wave by a position of the coils through which the currents pass. The metal layer as a substrate material is a thin electroconductive metal plate which is flexible and not readily broken.



ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:  
22 December 2005

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

# INTERNATIONAL SEARCH REPORT

Inten nal Application No  
PCT/JP2004/018685

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 G06F3/033 G09F9/37

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G09F G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 489 899 B1 (ELY DAVID T. E ET AL) 3 December 2002 (2002-12-03) column 23, line 34 - column 24, line 65; figures 23-27	1-11
A	US 6 445 489 B1 (JACOBSON JOSEPH M ET AL) 3 September 2002 (2002-09-03) column 4, line 42 - line 56 column 11, line 13 - line 17; figure 1	1,6,7,11
A	WO 92/16368 A (CALCOMP INC) 1 October 1992 (1992-10-01) page 3, line 30 - page 5, line 5; figures 3-6	1,7,11

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the International search

10 October 2005

Date of mailing of the International search report

21/10/2005

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## INTERNATIONAL SEARCH REPORT

Inten al Application No  
PCT/JP2004/018685

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 461 614 A (SEIKO INSTRUMENTS INC) 18 December 1991 (1991-12-18) page 2, line 56 - line 59 page 4, line 32 - line 44; figure 1	1,7,11
A	FERRARIS L ET AL: "EMI shielding-common problems and containment strategies" ELECTROMAGNETIC COMPATIBILITY PROCEEDINGS, 1997., 1997 INTERNATIONAL SYMPOSIUM ON BEIJING, CHINA 21-23 MAY 1997, NEW YORK, NY, USA, IEEE, US, 21 May 1997 (1997-05-21), pages 86-89, XP010242980 ISBN: 0-7803-3608-9 the whole document	7-10
A	EP 0 511 406 A (SEIKO INSTRUMENTS INC) 4 November 1992 (1992-11-04) column 4, line 13 - line 58 column 6, line 19 - column 7, line 17; figures 1-3	1,7,11
A	US 5 444 190 A (YAMANAMI ET AL) 22 August 1995 (1995-08-22) column 3, line 31 - column 4, line 55; figures 1,2	1,7,11
A	SOGLASNOVA V A ET AL: "AMPLITUDE AND PHASE CHARACTERISTICS OF METAL MESHES-THE ELEMENTS OF SUBMILLIMETER INTERFERENCE FILTERS" INTERNATIONAL JOURNAL OF INFRARED AND MILLIMETER WAVES, PLENUM PUBLISHING, NEW YORK, US, vol. 14, no. 1, January 1993 (1993-01), pages 155-165, XP000298863 ISSN: 0195-9271 the whole document	7-10
A	WANG JING ET AL: "The calculating and analysis of shielding effectiveness of metal meshes in transient electromagnetic interference" ENVIRONMENTAL ELECTROMAGNETICS, 2003. CEEM 2003. PROCEEDINGS. ASIA-PACIFIC CONFERENCE ON HANGZHOU, CHINA NOV. 4-7, 2003, PISCATAWAY, NJ, USA, IEEE, 4 November 2003 (2003-11-04), pages 379-385, XP010695959 ISBN: 7-5635-0802-3 the whole document	7-10

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter	nal Application No
PCT/JP2004/018685	

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
US 6489899	B1	03-12-2002	NONE		
US 6445489	B1	03-09-2002	US 2003076573 A1		24-04-2003
WO 9216368	A	01-10-1992	AU 664698 B2 AU 1556592 A CA 2109615 A1 CN 1065147 A DE 69225397 D1 DE 69225397 T2 EP 0576542 A1 ES 2117047 T3		30-11-1995 21-10-1992 21-09-1992 07-10-1992 10-06-1998 03-09-1998 05-01-1994 01-08-1998
EP 0461614	A	18-12-1991	JP 3145385 B2 JP 4047321 A US 5220324 A		12-03-2001 17-02-1992 15-06-1993
EP 0511406	A	04-11-1992	WO 9209029 A1		29-05-1992
US 5444190	A	22-08-1995	JP 5158606 A		25-06-1993